(No Model.) 2 Sheets—Sheet 1.

C. SCHRAUBSTADTER, Jr. & C. R. SCHILLING.

BELT SHIFTER.

No. 492,752. Patented Feb. 28, 1893.

Fig. I.

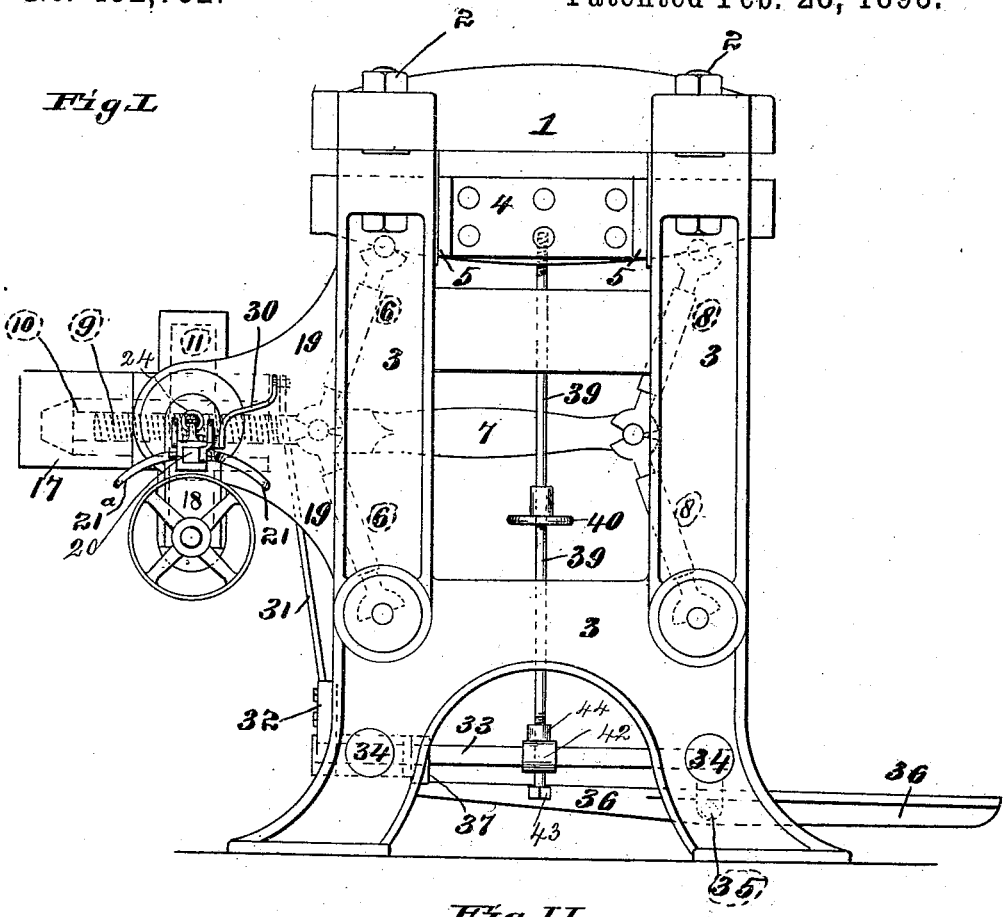


Fig. II.

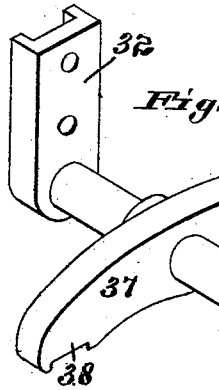


Fig. III.

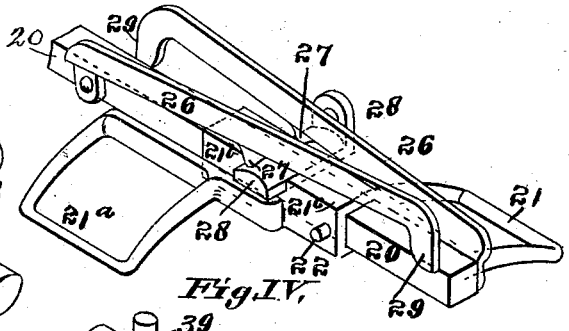
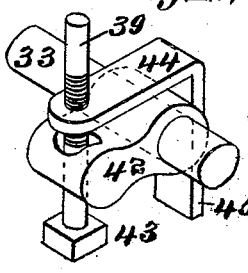


Fig. IV.



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(No Model.) 2 Sheets—Sheet 2

C. SCHRAUBSTADTER, Jr. & C. R. SCHILLING.

BELT SHIFTER.

No. 492,752. Patented Feb. 28, 1893.

Fig. V.

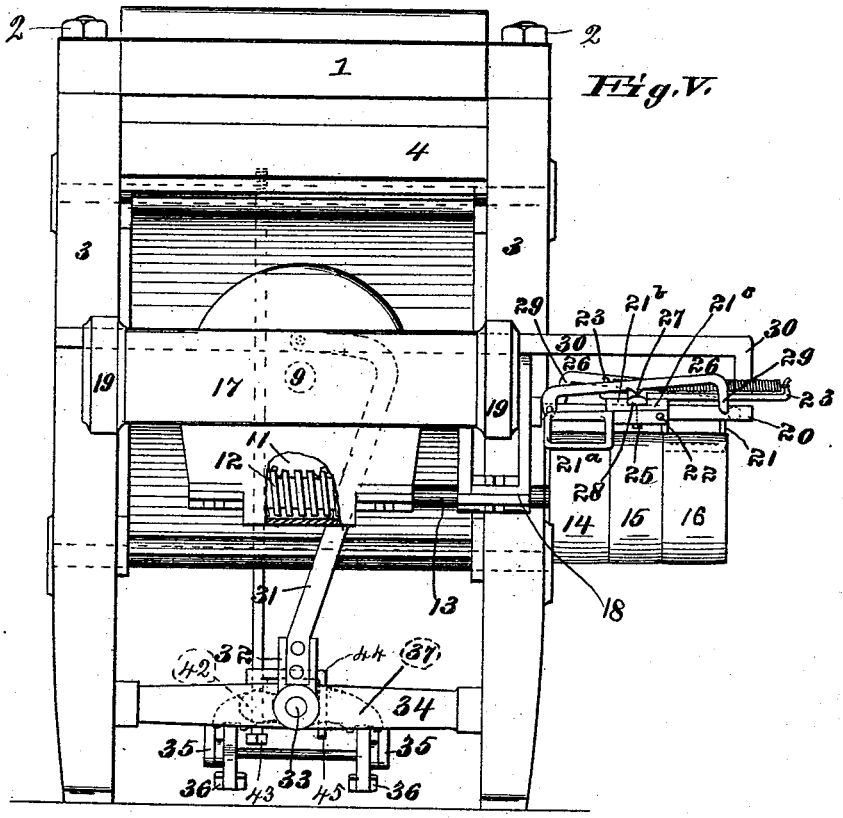
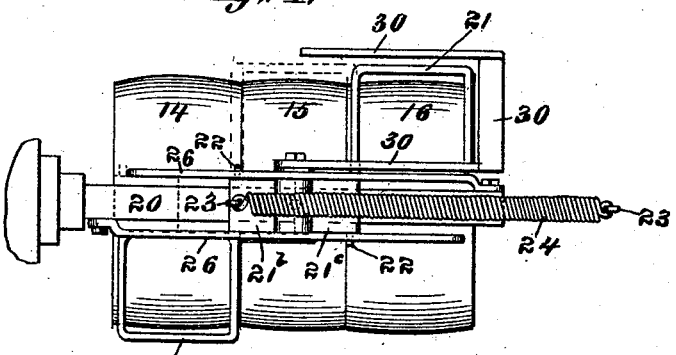


Fig. VI.



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UNITED STATES PATENT OFFICE.

CARL SCHRAUBSTADTER, JR., AND CHARLES R. SCHILLING, OF ST. LOUIS, MISSOURI, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE WESTERN ENGRAVERS' SUPPLY COMPANY, OF SAME PLACE.

BELT-SHIFTER.

SPECIFICATION forming part of Letters Patent No. 492,752, dated February 28, 1893.

Application filed April 20, 1892. Serial No. 429,951. (No model.)

To all whom it may concern:

Be it known that we, CARL SCHRAUBSTADTER, Jr., and CHARLES R. SCHILLING, both of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Belt-Shifters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to a method of shifting belts on power machinery, either at the will of the operator or automatically, when the work has been performed.

Our invention consists in features of novelty hereinafter fully described and pointed out in the claims.

The drawings show one form of our invention applied to a toggle press, such as used by electrotypers for molding their matrices.

Figure I is a side elevation of the machine. Fig. II is an enlarged perspective view of part of the belt shifting arrangement, the spring and pulleys being omitted. Figs. III and IV show parts of the rock shaft and automatic shipper. Fig. V is a rear elevation of the machine. Fig. VI is a top view of part of the belt shifting arrangement.

1 represents the upper or fixed platen, held by the bolts 2 to the frame 3.

4 represents the lower or moving platen guided by the side flanges 5, so as to run between the uprights of the frame 3.

6 represents the forward toggles connected by a link 7 to the rear toggles 8 in the usual manner. Connected to the forward toggles is a screw 9 which runs in a nut 10. This nut is turned by a worm wheel 11, actuated by a worm 12 upon a power shaft 13, (see Fig. V.) On the shaft 13 are loose pulleys 14 and 16, and a tight pulley 15. The nut 10, worm 12, worm-wheel 11 and shaft 13 are supported by a bridge tree 17.

18 is an extra support for the shaft 13.

19 are arms of the frame 3 through which projecting lugs of the bridge tree pass supporting it and allowing a small amount of swinging motion.

The parts thus far described are old and common, and their operation well understood.

20 is a bar extending from the shaft support 18. On this the belt fingers or loops 21, 21^a slide freely. The finger or loop 21 is on a sleeve 21^b that fits on the bar 20, and the finger or loop 21^a is on a sleeve 21^c that fits on the bar 20. These two sleeves move toward and away from each other as the belts are shifted. Each sleeve has upon it a pin or projection 22, and a hook 23 between which is a spring 24. On the bar 20, between the two sleeves, is a pin or lug 25. Pivoted to opposite side of the bar 20 are levers 26. Each of these levers has upon its center, a projecting lug 27, of such shape that when the pusher 28, which lies between the fingers or loops 21, 21^a, is in its normal position, the ends 29 of the levers 26 are held higher than the pin or projection 22. The pusher 28 slides upon the surface of the bar 20. It is connected by a bent arm 30 to a lever 31, made fast to a crank 32 on a rock shaft 33, see Figs. I and V. The rock shaft 33 has bearings in cross braces 34 of the frame of the machine. On the forward cross brace 34 are lugs 35 on which are pivoted the treadles 36. On the rock shaft 33 is an arm or cross head 37 (see Fig. III) having notched bearings 38 beneath which the ends of the treadles 36 bear.

39 is a vertical bar or rod having a handle 40 by means of which it can be screwed into the platen 4 by the thread on its upper end. The lower end, or the rod 39 passes through an arm 42 which is secured to the rock shaft 33. The lower end of the rod has a nut 43 (see Fig. IV). Immediately above the arm 42 the rod is threaded and passes through a plate 44 which has a projecting arm 45 to prevent its turning.

When the machine is at rest, the loose pulleys 14 and 16 are revolving—the belts running through the fingers or loops 21, 21^a, one of them being twisted so that pulley 14 revolves from right to left, and 16 from left to right.

The action of the machine is as follows: The operator stands before the machine, the platen 4 being lowered as seen in Fig. I, presses his foot against the treadle 36 nearest the belts. This will cause the arm 37 to rise on this side, and the movement being transmitted by the lever 31, the arm 30, is moved

toward the left (Fig. V), and the pusher 28 being connected with it and resting against the right hand finger or loop, pushes it over so that it occupies the position shown by dotted lines in Fig. VI. As soon as the pusher 28 disengages from the lug 27 on the lever 26, said lever drops so that its end 29 is below the pin or projection 22. As the pin or projection 22 strikes the curved surface of the end 29, it raises the lever slightly so that it can pass, when the lever will again drop and resting against the pin or projection 22 will prevent the spring 24 from bringing the finger or loop back to the loose pulley. The pin or lug 25 prevents the other finger or loop from being pulled forward. The belt being on the tight pulley, the shaft is revolved, and the worm engaging with the worm wheel, revolves this and the nut splined to it in such manner as to push the screw forward straightening out the toggles and raising the platen 4. The pin or projection 22 being engaged by the end 29 of the lever 26, it will not be necessary for the operator to keep his foot on the treadle. The platen will continue to rise until the upper surface of the nut 43 on the rod 39 engages with the lower surface of the arm 42, turning the rock shaft so that the arm 37 will again be horizontal. The arm 30 being moved to the right, the pusher 28 will engage with lug 27 on the arm 26 raising the lever and allowing the spring 24 to bring the finger or loop back to the loose pulley. Pressing down the other lever 36 will shift the other belt from the pulley 14, onto the tight pulley 15, the other lever 26 engaging with the pin or projection 22 in its finger or loop so as to keep the belt in place. The platen will continue to descend until the plate 44 engages with the arm 42 again bringing the shaft to its normal position and allowing the spring 24 to bring the finger or loop and belt back to the loose pulley. It is, of course, understood that if the pressure has been put on one treadle the machine can be stopped by the operator at any point by pressing on the other so as to release the lever 26. Should it be found necessary to give the platen 4 more or less movement, so that the impression will be deeper or more shallow, the bar 39 can be turned by the handle 40 so as to screw it into or out of the platen. This will increase or decrease the distance between the nut 43 and the lower surface of the arm 42 and in this manner increase or decrease the amount of impression. As the plate 44 is provided with a tail-piece 45 which prevents it from revolving, the distance between the lower surface of the platen 4 and the surface of the plate 44 always remains the same, and in consequence there is no danger that the regulation of the impression by turning the bar or rod 39 will change its position when at its lowest position, so that the screw 9 will run too far into the nut 10, and break the machine. In this form of our invention we have shown a shifting arrangement adapted to a machine which operates both ways by power. It can also be applied to a machine which operates but one way, or in which the return is accomplished by hand power, as in some forms of electrotypers' shavers, and other machines.

The device can also be adapted so as to be used on machinery in which the shifting is done by hand instead of treadles.

Numerous modifications can be made of our invention. Thus, in place of having but one spring and one pusher, the fingers or loops instead of crossing each other, could be made to come out directly from their supports and be held over the loose pulleys by separate springs. The pusher could then be made so as to span the bearings of the fingers or loops and push from the outside instead of the inside, as shown in the construction we have illustrated.

We claim as our invention—

1. In a shipper for power machinery, the combination of fingers 21, 21ª, a bar 20, a pin 25, a spring 24, and a pusher 28, substantially as described.

2. In a shipper for power machinery, the combination of a bar 20, fingers 21, 21ª, having projections 22, pivoted levers 26 having ends adapted to engage with said projections, and a pusher 28 of suitable shape to release said levers.

3. In a shipping device for power machinery, the combination of the pusher 28, and a bar 20, the fingers 21, 21ª, having projections 22, and pivoted levers 26, having ends 29 to engage with said projections, and having lug 27 to engage with said pusher 28, substantially as described.

4. In a shipping device for power machinery, the combination of the bar 20, the fingers 21, 21ª, pins 22, levers 26, pin 25, and spring 24, substantially as described.

5. In a shipping device for power machinery, the combination of the bar 20, a pin 25, the fingers 21, 21ª, spring 24, pusher 28, arm 30, rod 31, and rock shaft 33, substantially as described.

6. In a shipping device for power machinery, the combination of the bar 20, the fingers 21, 21ª, pusher 28, rock-shaft 33, arm 37, and treadles 36, together with suitable connecting mechanism.

7. In a shipping device for power machinery, an adjustable rod 39, having a nut 43, a plate 44 having tail piece 45, which is fixed in its relation with the other parts and rock-shaft 33 having an arm 42 through which the rod is passed.

8. In a shipping device for power machinery, the combination of a rod 39, connected with a moving part of a machine, having a nut 43, an arm 42, rock-shaft 33, lever 31 arm 30 pusher 28 a bar 20 and the fingers 21, 21ª, substantially as described.

9. In a shipper for power machinery, the combination of a bar 20, a belt finger having a projection 22, a pivoted lever 26 having the end adapted to engage with said projection,

and a pusher 28 of suitable shape to release said lever.

10. In a shipping device for power machinery, the combination of a pusher 28, a bar 20, belt finger having a projection 22, and a pivoted lever 26 having an end 29 to engage with said projection and having a lug 27 to engage with said pusher; substantially as described.

11. In a shipping device for power machinery, the combination of a bar 20, a belt finger, spring 24, pusher 28, arm 30, rod 31, and rock shaft 33; substantially as described.

12. In a shipping device, the combination of a bar 20, a belt finger, pusher 28, rock shaft 33, arm 37 arm 30, lever 31, and treadle 36, together with suitable connecting mechanism.

13. In a shipping device, the combination of a bar 20 having a pin 25, belt finger, spring 24, and pusher 28; substantially as set forth.

CARL SCHRAUBSTADTER, JR.
CHARLES R. SCHILLING.

In presence of—
E. S. KNIGHT,
A. M. EBERSOLE.